

Listing of Claims

This listing of claims replaces all prior versions of claims in the application.

1. (Previously Presented) A method of manufacturing a semiconductor device comprising the step of forming a laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, an extinction coefficient k of the innermost layer is 0.3 or more, and an extinction coefficient k of the inner layer is 0.12 or more.

2. (Original) A method of manufacturing a semiconductor device according to Claim 1, wherein the extinction coefficient k of the inner layer is 0.12 to 0.28.

3. (Original) A method of manufacturing a semiconductor device according to Claim 1, wherein a thickness of the inner layer is 0.08 μm to 0.12 μm .

4. (Previously Presented) A method of manufacturing a semiconductor device comprising the step of forming a laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material, and a surface layer comprising a photosensitive resin, an extinction coefficient k of the innermost layer is less than 0.3, and an extinction coefficient k of the inner layer is 0.18 or more.

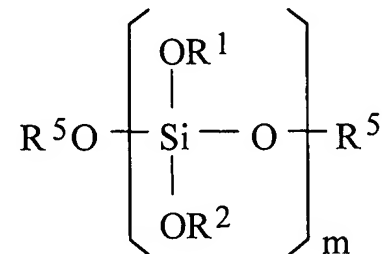
5. (Original) A method of manufacturing a semiconductor device according to Claim 4, wherein the extinction coefficient k of the inner layer is 0.28 to 0.45.

6. (Original) A method of manufacturing a semiconductor device according to Claim 5, wherein a thickness of the inner layer is 0.08 μm to 0.10 μm .

7. (Original) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein the extinction coefficient k of the inner layer is obtained when a light having wavelength of 190 nm to 250 nm is irradiated to the inner layer.

8. (Original) A method of manufacturing a semiconductor device according to Claim 7, wherein the light having wavelength of 190 nm to 250 nm is an ArF excimer laser light.

9. (Currently Amended) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein the inner layer comprises a polysiloxane compound expressed by the following ~~Formula (1)~~; Formula (1):



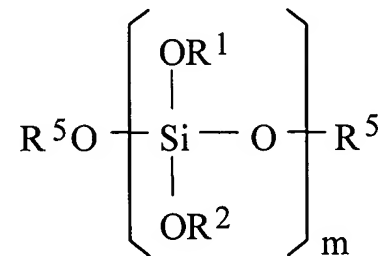
Formula (1)

wherein R^1 and R^2 each express a hydrogen atom or a light absorbent group, and in one molecule of the polysiloxane compound, an entire portion thereof may be a light absorbent group, or a

portion thereof may be a light absorbent group, R^5 expresses a hydrogen atom or a substituent; and m expresses a degree of polymerization.

10. (Currently Amended) A method of manufacturing a semiconductor device comprising the step of forming a laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, and the inner layer comprises a polysiloxane compound expressed by the following ~~Formula (1)~~; Formula (1):



Formula (1)

wherein R^1 and R^2 each express a hydrogen atom or a light absorbent group, and in one molecule of the polysiloxane compound, an entire portion thereof may be a light absorbent group, or a portion thereof may be a light absorbent group, R^5 expresses a hydrogen atom or a substituent; and m expresses a degree of polymerization.

11. (Original) A method of manufacturing a semiconductor device according to Claim 9, wherein the light absorbent group is selected from aromatic groups.

12. (Original) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein the surface layer comprises an ArF excimer laser resist.

13. (Original) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein a photoreflectance of the inner layer is 2.0% or less.

14. (Original) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein a change ($\%/\mu\text{m}$) of a photoreflectance is 50 or less.

15. (Original) A method of manufacturing a semiconductor device according to one of Claims 1 and 4, wherein the innermost layer is formed by coating a composition for innermost layer formation on the substrate, and baking at 300°C or more.

16. (Previously Presented) A method of manufacturing a semiconductor device comprising the step of forming a laminated film for pattern formation on a substrate, wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, and the innermost layer is formed by coating a composition for innermost layer formation on the substrate, and baking at 300°C or more.

17. (Original) A method of manufacturing a semiconductor device according to Claim 16, wherein the composition for innermost layer formation contains an additive, and the additive is removed from the innermost layer when the innermost layer is baked at 300°C or more.

18. (Original) A method of manufacturing a semiconductor device according to Claim 17, wherein the additive disappears from the innermost layer at less than 300°C.

19. (Original) A method of manufacturing a semiconductor device according to Claim 17, wherein the additive is at least one selected from surfactants.

20. (Original) A method of manufacturing a semiconductor device according to Claim 16, wherein the inner layer is formed by coating a composition for inner layer formation on the substrate, and baking at less than 300°C.

21. (Original) A method of manufacturing a semiconductor device according to Claim 16, wherein the composition for innermost layer formation contains a thermosetting resin, and the thermosetting resin is a novolak resin.

22. (Previously Presented) A method of forming a pattern comprising the step of forming a laminated film for pattern formation on a substrate,

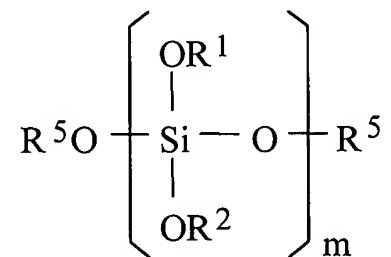
wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, an extinction coefficient k of the innermost layer is 0.3 or more, and an extinction coefficient k of the inner layer is 0.12 or more.

23. (Previously Presented) A method of forming a pattern comprising the step of forming a laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, an extinction coefficient k of the innermost layer is less than 0.3, and an extinction coefficient of the inner layer is 0.18 or more.

24. (Currently Amended) A method of forming a pattern comprising the step of forming laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicone-containing light absorbent material and a surface layer comprising a photosensitive resin, and the inner layer comprises a polysiloxane compound expressed by the following ~~Formula (1)~~; Formula (1):



Formula (1)

wherein R^1 and R^2 each express a hydrogen atom or a light absorbent group, and in one molecule, an entire portion thereof may be a light absorbent group, or a portion thereof may be a light absorbent group, R^5 expresses a hydrogen atom or a substituent; and m expresses a degree of polymerization.

25. (Previously Presented) A method of forming a pattern comprising the step of forming a laminated film for pattern formation on a substrate,

wherein the laminated film for pattern formation includes an innermost layer comprising a thermosetting resin, an inner layer comprising a silicon-containing light absorbent material and a surface layer comprising a photosensitive resin, and the innermost layer is formed by coating a composition for innermost layer formation on the substrate, and baking at 300°C or more.